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Reply to: 3460 October 19, 1987

Subject: Beech Bark Disease - Hearts Content Scenic Area

To: District Ranger, Sheffield Ranger District

Enclosed is a report on a beech bark disease evaluation conducted at Hearts Content Scenic Area. I believe there is a potential hazard to visitor's who enjoy walking the trail system because of the increased number of dying American beech trees.

Please let me know if you have any questions regarding the evaluation, or implementing one or more of the recommendations on the last page.

William A Jackson
Plant Pathologist
Forest Pest Management

cc: Timber Management, ANF
Dave Houston, Hamden
FPM, AO

Evaluation of American Beech Within the Hearts Content Scenic Area
Allegheny National Forest
October 1987

Introduction

The beech bark disease complex has been present within the Hearts Content Scenic Area since at least 1985. The disease kills American beech because Nectria spp. infects wounds caused by the beech scale (Cryptococcus fagisuga Lind.). FPM personnel visited Hearts Content and noticed many of the American beech had chlorotic crowns, or were dead along the visitor's trail. The purpose of this report is to present the amount of dead and declining American beech at Hearts Content.

Methods

Twelve variable radius plots were systematically placed within Hearts Content. A thirteenth plot was placed where a large number of declining and dead beech trees occurred (Figure 1). A 20 basal area factor wedge prism was used at each of the plots, and the species and diameter at breast height (5.0 inches or larger) was recorded for each tree. Each standing tree was classified as healthy, declining, or dead. Furthermore, each American beech tree was examined for Nectria spp. and beech scale. Finally, potentially hazardous American beech trees to visitors walking the trail were counted.

Results and Discussion

The American beech composed about a quarter of the total basal area for the stand, but the stand has a very high basal area because of large old growth trees. Only 12 percent of the total basal area is declining or dead American beech. The amount of declining trees for all of the species was 16 percent of the total basal area, and about half of the declining trees were American beech. Hemlock was recorded to have the second greatest amount of declining trees. Twenty square feet of declining American beech were found without the beech scale and probably had chlorotic crowns due to gypsy moth defoliation. The dead trees comprised 14 percent of the total basal area, and 28 percent of the dead trees were American beech (Table 1). The other major species recorded to be dead were hemlock and white pine. The average stand diameter was 23.9 inches and indicates a majority of the trees are large (Table 2).

Plot number thirteen was placed where a large number of beech were present (120 square feet per acre). All of these trees were infested with beech scale and 33 percent of the American beech were declining and 67 percent of the beech trees were dead. The trees within this plot are indicative of what will happen to the American beech in the Scenic Area within the next 10 years. All of the beech will be infested with the beech scale and then Nectria infection will occur and cause the death of the trees.

A total of 16 scale infested and 4 dead American beech were found along the visitor's trail. All of the scale infested beech had a heavy scale population and only two of the trees had Nectria spp. present. Eventually, all of the American beech will die along the visitor's trail and the death of these trees will increase the likelihood of injury occurring to the public because the branches, the tops of trees, or the trunks may break.

Recommendations

The Hearts Content Scenic Area provides a unique opportunity for the public to view old growth white pine, hemlock and American beech. If no action is taken to control the beech scale then all of the beech will probably die. The increased number of dead trees will increase the likelihood of injury occurring to visitor's along the trail system. Therefore, we suggest the District implement one or more of the following recommendations:

1) Place a sign along the visitor's trail to educate the public why the American beech are dying, and the potential hazard of dead trees.

2) Remove dead and scale infested American beech along the trail if no other action is taken. Periodical removal of dead American beech will have to occur in the future.

3) Remove dead and Nectria infected trees along the trail system. Treat all of the American beech in the early spring with 72 superior oil (a dormant oil) to suffocate the scale population on the trees. The American beech will have to be monitored and treatments will probably have to occur in the future.

Figure 1. Prism plot locations with the Hearts Content Scenic Area, Allegheny NF, August 1987.

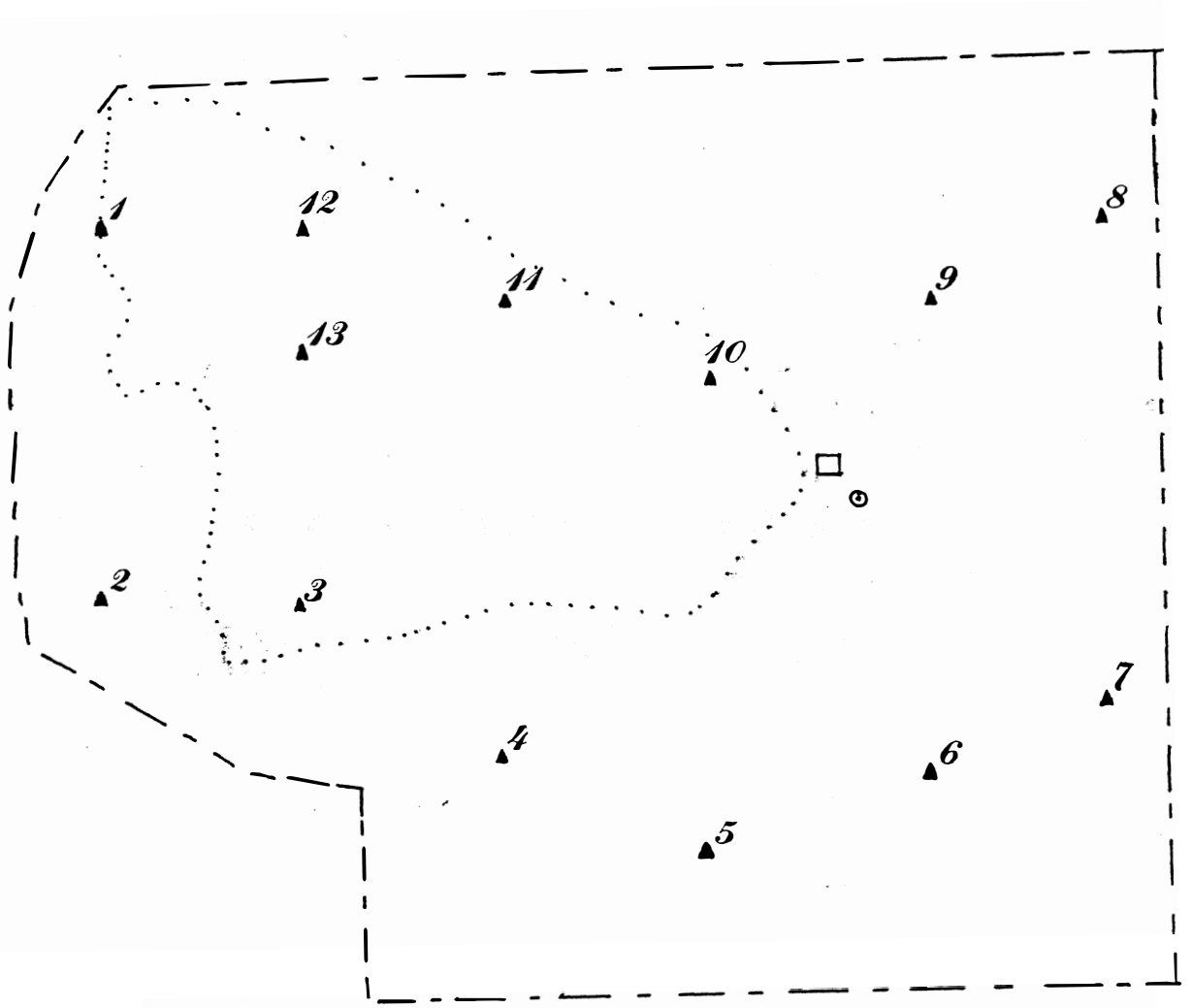
Table 1. Basal area of healthy, declining, and dead trees and American beech within the Hearts Content Scenic Area, Allegheny NF, August, 1987.

	ALL SPECIES (sq. ft. / acre)				AMERICAN BEECH (sq. ft. / acre)			
PLOT	HEALTHY	DECLINING	DEAD	TOTAL	HEALTHY	DECLINING	DEAD	TOTAL
1	140	-	20	160	40	-	20	60
2	260	20	20	300	40	20*	-	60
3	180	40	-	220	20	40*	-	60
4	80	40	20	140	20	20*	-	40
5	200	120	20	340	80	20	-	100
6	160	-	-	160	60	-	-	60
7	200	-	20	220	-	-	-	-
8	120	-	80	200	-	-	20	20
9	140	-	20	160	20	-	-	20
10	120	40	40	200	-	-	-	-
11	80	40	80	200	-	20*	60	80
12	40	100	20	160	-	80*	-	80
Mean	143	33	28	205	23	17	8	48
Percent	70	16	14	-	48	35	17	-

*/ All of the American beech trees had the beech scale present.

Table 2. Average diameter of healthy, declining and dead trees and American beech within the Hearts Content Scenic Area, Allegheny NF, August 1987.

	HEALTHY	DECLINING	DEAD	AVERAGE
ALL SPECIES	25.2	17.0	25.3	23.9
AMERICAN BEECH	17.2	17.3	14.4	16.7


1
12
8
11
9
13
10
2
3
7
4
6
5
KEY
Boundary
Trail
Monument
Plots
SCALE
0
600
1200'